Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20580

In the Matter of	)	
Amendment of Parts 2 and 15 of the Commission's Rules Regarding Spread Spectrum Transmitters	)	ET Docket No. 96-8 RM-8435, RM-8608, RM-8609

COMMENTS OF SPECTRALINK CORPORATION, INC.

SpectraLink Corporation ("SpectraLink"), by its undersigned counsel and pursuant to Section 1.415 of the Commission's rules, hereby submits its Comments in response to the Federal Communications Commission's ("FCC" or "Commission") Notice of Proposed Rule Making ("*Notice*") in the above-captioned proceeding.[1/] Specifically, SpectraLink addresses those portions of the Commission's *Notice* that relate to SpectraLink's proposal to modify the Commission's rules governing spread spectrum, frequency-hopping Part 15 devices operating in the 902-928 MHz ("915 MHz") band.[2/]

1/ *In the Matter of Amendment of Parts 2 and 15 of the Commission's Rules Regarding Spread Spectrum Transmitters*, Notice of Proposed Rule Making, ET Docket No. 96-8 (Rel. February 5, 1996).

2/ *Notice* ¶¶ 26-34.

I. STATEMENT OF INTEREST

SpectraLink was founded in 1989 to meet the existing market demand for a communications product that could provide wireless telephone communications as an adjunct to the business community's existing PBX and Centrex telephone systems. From its inception, SpectraLink has invested substantial amounts of human and financial resources designing, manufacturing, and marketing the SpectraLink Pocket Communications System. The Pocket Communications System is a spread spectrum, frequency-hopping device operating in the 915 MHz band in compliance with Section 15.247(a)(1)(i) of the Commission's Rules.

As a manufacturer of Part 15 wireless telephone equipment, SpectraLink has a keen interest in maximizing spectrum efficiency for shared spectrum bands. In an effort to reduce the likelihood of harmful interference with SpectraLink products and in order to facilitate coexistence between AVM/LMS and Part 15 devices, SpectraLink filed with the Commission in January, 1995, a Petition for Rule Making ("*Petition*") that proposed to reduce the spectral occupancy of frequency-hopping spread spectrum devices operating in the 902-928 MHz band from a maximum of nearly 26 MHz to approximately 13 MHz. The Commission's *Notice* recognizes that all parties were generally supportive of SpectraLink's *Petition* and recommends modification of its rules in a manner consistent with SpectraLink's proposal.[3/] Having initially proposed the modification to the Commission's Part 15 rules, SpectraLink maintains a significant and vital interest in the outcome of this proceeding. As outlined below, SpectraLink fervently believes that modification of the FCC's Part 15 rules governing frequency-hopping spread spectrum devices operating in the 915 MHz band, consistent with the proposal outlined in the Commission's *Notice*, would maximize

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3/ *Notice* at ¶ 28, ¶¶ 26-34.

spectrum efficiency, encourage further innovation, accommodate future deployment of frequency-hopping spread spectrum Part 15 products, and otherwise be in the public interest.

II. DISCUSSION

A. General Comments Concerning the Commission's Proposal Regarding Frequency Hopping, Spread Spectrum Devices

SpectraLink is pleased that the Commission has proposed adoption of its earlier recommendation to reduce the minimum number of hopping channels from 50 to 25 as applied to spread spectrum systems operating in the 915 MHz band. Adoption of this rule would significantly reduce the spectral occupancy of Part 15 devices, and, when coupled with a subsequent reduction in maximum transmitter power to no greater than 500 mW for devices hopping on less than 50 channels, would enable Part 15 devices the most effective means to avoid interference with AVM/LMS systems which share spectrum in the same band. In this fashion, the Commission's proposal serves to benefit both LMS operators and the Part 15 community.

The Commission's proposal that hopping channels not be required to be contiguous, but rather that they may be "mapped" to specifically avoid LMS spectrum, will allow for greater flexibility in interference avoidance than would otherwise be possible. In the past, Part 15 spread-spectrum devices have relied upon processing gain and the statistical nature of frequency hopping systems to avoid interference with LMS operations It is SpectraLink's view that frequency avoidance is the preferred method of preventing interference in the case of collocated operation of multiple radio systems. Existing Commission requirements for frequency hopping systems do not permit these devices, when taking full advantage of permissible occupied bandwidth, to avoid the spectrum in the 902-928 MHz band that is required for interference-free LMS operation. The

application of the Commission's proposed rule changes will, however, permit a frequency hopping device to avoid, at a minimum, 12.5 MHz of spectrum, thus permitting peaceful co-existence with up to two multi-lateration LMS operators in a single metropolitan area.

B. Minimum Number of Hopping Channels

The Commission specifically seeks comment as to whether the rules should specify a formula for the minimum number of hopping channels "based on the amount by which the bandwidth of the hopping channel exceeds 250 kHz."[4/] Under this approach, the minimum number of hopping frequencies would be equal to 25 x (500/20 dB bandwidth of a single hopping channel in kHz) or 50 hopping frequencies, whichever results in the lowest number of hopping frequencies. Adoption of this formula would also require that the average time of occupancy on any hopping frequency not exceed 0.4 seconds within a 20 x(number of hopping channels/50) second period.

The Commission's proposal is apparently intended to "randomize" the spectral energy of frequency hopping systems, requiring narrowband systems to use more hopping channels and wideband systems to use fewer hopping channels. The Commission's proposed equation assumes that the occupied bandwidth and the channel spacing are the same. However, in the case where the channel spacing exceeds the occupied bandwidth, the system is forced to use excessive bandwidth.

For example, if the occupied bandwidth is 350 kHz and the channel spacing is 500 kHz, the formula [25 x (500/350)] yields a requirement of 36 channels, yet the total system occupancy will result in [36 x 500 kHz] = 18 MHz. This exceeds the intended frequency occupancy of 12.5 MHz,

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4/ *Notice* at ¶ 32.

and would prevent a frequency hopping system with these characteristics from co-existing with two multi-lateration LMS systems.

Since the goal of the *Notice* is to minimize interference between Part 15 frequency hopping spread spectrum devices and multi-lateration LMS operations, it is SpectraLink's opinion that the simple solution of permitting between 25 to 50 channels, with a fixed maximum transmitter power of 500 mW, is the most desirable alternative. The occupied bandwidth for systems using between 25 to 50 channels will be limited to between 250 kHz and 500 kHz, so that a system with an occupied bandwidth of at least 250 kHz would be permitted to use as few as 25 channels (at no greater than 500 mW). SpectraLink respectfully submits that this permits the most efficient spectrum utilization in the case of two or more co-existing systems.

C. Further Reductions in Output Power

The Commission proposes that frequency hopping spread spectrum systems operating in the 915 MHz band that use fewer than 50 hopping channels, operate with a maximum peak transmitter power output of 500 mW.[5/] The Commission raises for comment whether a linear reduction in output power is sufficient to reduce the potential for harmful interference.

SpectraLink believes that Part 15 frequency hopping devices operating in the 915 MHz band using fewer than 50, but greater than 25, channels be limited to no more than 500 mW peak transmitter output power. This limitation of power is sufficient to protect other devices from harmful interference and will provide operators with simple, straightforward rules that will facilitate compliance.

[5/] *Notice* at ¶ 33.

III. CONCLUSION

For the foregoing reasons, SpectraLink urges the Commission to amend its rules to permit frequency-hopping spread spectrum devices operating in the 915 MHz band to use a minimum of 25 non-contiguous hopping frequencies and operate at a maximum authorized transmitter power of 500 mW.

Respectfully Submitted,

SPECTRALINK CORPORATION, INC.

By: _____

Andrew D. Lipman
Margaret M. Charles
William B. Wilhelm, Jr.

SWIDLER & BERLIN, CHARTERED
3000 K Street, N.W., Suite 300
Washington, D.C. 20007-5116
(202) 424-7654

Its Counsel

Thomas Ohlsson
Product Manager
SpectraLink Corporation, Inc.
1650 - 38th Street, Suite 202E
Boulder, CO 80301
(303) 440-5330

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